

What is claimed is:

1 1. A system for use in wirelessly transmitting a communication signal to a remote
2 transceiver, said system comprising:
3 an array of transmit antenna elements arranged in a predetermined pattern;
4 a direction determination unit to determine a direction of the remote transceiver;
5 a transmit beamformer coupled to said array of antenna elements to generate a
6 transmit beam in the direction of the remote transceiver; and
7 a power control unit to determine an antenna gain related parameter associated
8 with said transmit beam generated by said transmit beamformer and to adjust a transmit
9 power level of said system based on said antenna gain related parameter.

1 2. The system claimed in claim 1, further comprising:
2 a duty cycle unit, coupled to said power control unit, to determine an average
3 transmit duty cycle of said system over a predetermined time period and to deliver said
4 average transmit duty cycle information to said power control unit, wherein said power
5 control unit uses said average transmit duty cycle information to adjust the transmit
6 power level of said system.

1 3. The system claimed in claim 1, wherein:
2 said power control unit adjusts said transmit power level of said system to
3 comply with mandated transmit power limits.

1 4. The system claimed in claim 1, wherein:
2 said array of transmit antenna elements, said direction determination unit, and
3 said transmit beamformer are each part of an adaptive antenna arrangement.

1 5. The system claimed in claim 1, further comprising:
2 an array of receive antenna elements that are arranged in a predetermined
3 pattern for use in receiving a communication signal from the remote transceiver,
4 wherein said direction determination unit includes means for analyzing signal portions

5 received by individual antenna elements within said array of receive elements to
6 determine the direction of the remote transceiver.

1 6. The system claimed in claim 1, wherein:
2 said transmit beamformer includes a variable delay unit for each of said antenna
3 elements within said array of transmit antenna elements and a controller to determine
4 a delay setting for each variable delay unit based upon the direction of the remote
5 transceiver determined by said direction determination unit.

1 7. The system claimed in claim 6, wherein:
2 said power control unit includes a controller to calculate said antenna gain
3 related parameter based upon delay settings of said transmit beamformer.

1 8. The system claimed in claim 1, wherein:
2 said transmit beam generated by said transmit beamformer is approximately
3 centered in the direction of the remote transceiver determined by said direction
4 determination unit.

1 9. The system claimed in claim 1, further comprising:
2 an input/output interface to couple said system to a data processing device.

1 10. The system claimed in claim 9, wherein:
2 said input/output interface includes a serial data port.

1 11. The system claimed in claim 9, wherein:
2 said input/output interface includes a universal serial bus (USB) port.

1 12. The system claimed in claim 9, wherein:
2 said input/output interface includes plug-and-play capability.

1 13. The system claimed in claim 1, wherein:
2 said array of transmit antenna elements, said direction determination unit, said
3 transmit beamformer, and said power control unit are each mounted on a common
4 support structure.

1 14. The system claimed in claim 13, wherein:
2 said common support structure is adapted for desktop placement.

1 15. The system claimed in claim 1, comprising:
2 at least one variable gain amplifier to amplify a transmit signal before it is
3 delivered to said array of transmit antenna elements during a transmit operation,
4 wherein said power control unit controls the gain of said at least one variable gain
5 amplifier to adjust the transmit power level of said system.

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1 16. A method for use in wirelessly transmitting a communication signal to a remote
2 location, said method comprising:
3 determining a direction of said remote location;
4 generating a transmit antenna beam in the direction of said remote location
5 using phased array principles;
6 determining a parameter related to an antenna gain associated with said transmit
7 antenna beam; and
8 using said antenna gain related parameter to adjust a power level of a transmit
9 signal to be transmitted to said remote location via said transmit antenna beam.

1 17. The method claimed in claim 16, further comprising:
2 determining an average transmit duty cycle associated with transmissions to
3 said remote location; and
4 using said average transmit duty cycle to adjust the power level of said transmit
5 signal.

1 18. The method claimed in claim 16, wherein:
2 using said antenna gain related parameter includes adjusting the power level of
3 said transmit signal in a manner that complies with mandated transmit power limits.

1 19. The method claimed in claim 18, wherein:
2 using said antenna gain related parameter includes adjusting the power level of
3 said transmit signal to maximize said power level while not exceeding said mandated
4 transmit power limits.

1 20. The method claimed in claim 16, wherein:
2 determining a direction of said remote location includes receiving an RF signal
3 from said remote location and analyzing said RF signal to determine the direction of
4 said remote location.

1 21. The method claimed in claim 16, wherein:
2 determining a direction, generating a transmit antenna beam, determining a
3 parameter related to an antenna gain, and using said antenna gain related parameter are
4 performed from a single indoor location.

1 22. A communication system for use in communicating with a remote
2 communication entity, comprising:
3 an array of antenna elements arranged in a predetermined configuration;
4 an adjustable beamformer coupled to said array of antenna elements to generate
5 a transmit beam in a predetermined direction in response to a control signal, said
6 adjustable beamformer being capable of generating a beam in any of a plurality of
7 different directions; and
8 a power control unit to adjust a power level of a transmit signal to be
9 transmitted by said array of antenna elements based on at least one parameter associated
10 with said transmit beam generated by said adjustable beamformer.

1 23. The communication system claimed in claim 22, wherein:
2 said at least one parameter associated with said transmit beam includes an
3 antenna gain related parameter.

1 24. The communication system claimed in claim 22, further comprising:
2 a duty cycle determination unit to determine an average transmit duty cycle of
3 said system over a predetermined time period, wherein said power control unit adjusts
4 the power level of the transmit signal to be transmitted by said array of antenna
5 elements based on said average transmit duty cycle.

1 25. The communication system claimed in claim 22, wherein:
2 said adjustable beamformer generates the transmit beam in the predetermined
3 direction using conventional phased array techniques.

1 26. The communication system claimed in claim 22, wherein:
2 said adjustable beamformer is part of an adaptive antenna arrangement.

1 27. The communication system claimed in claim 22, wherein:
2 said power control unit adjusts the power level of the transmit signal so that a
3 maximum allowed power level is not exceeded.

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